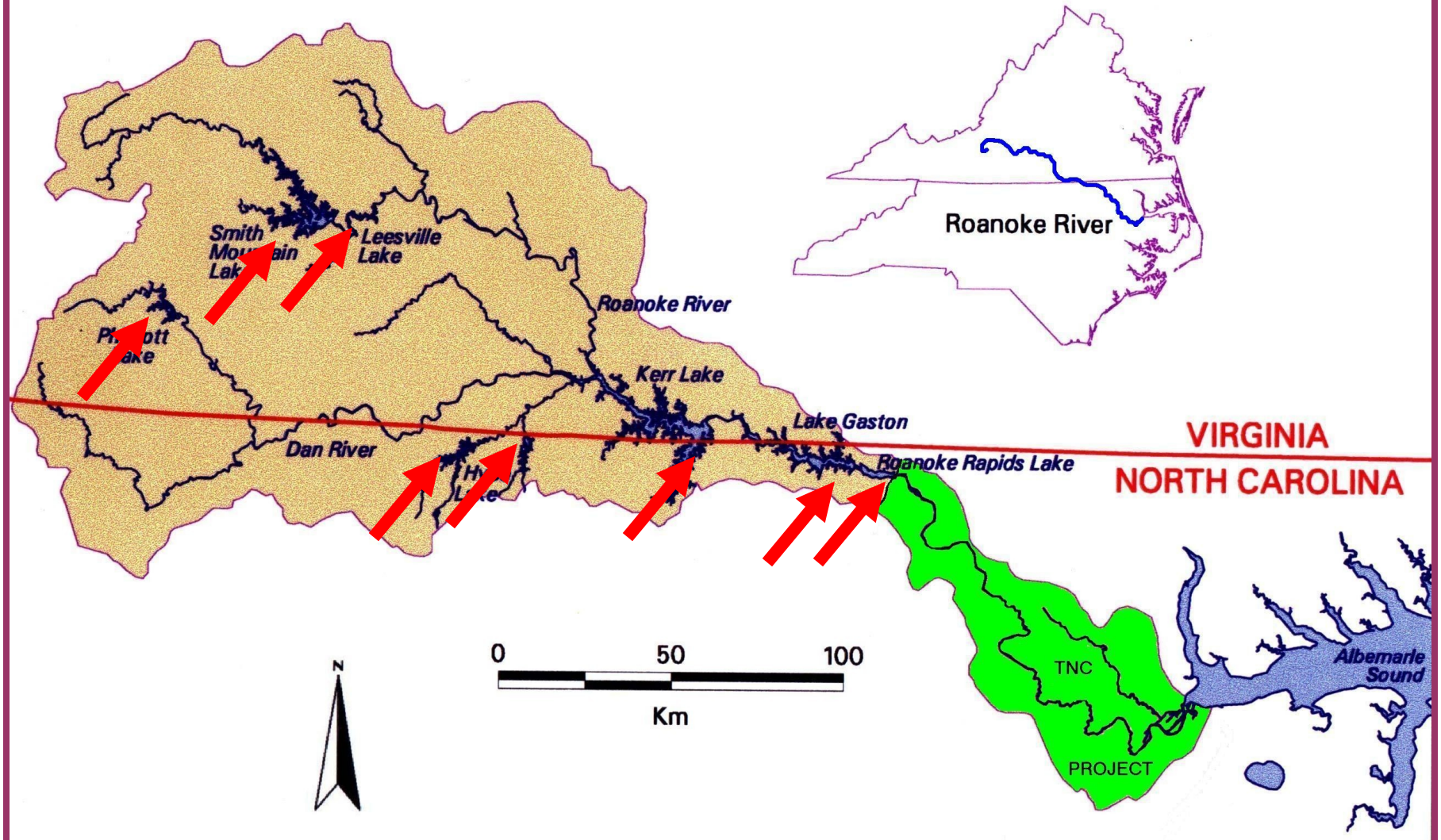
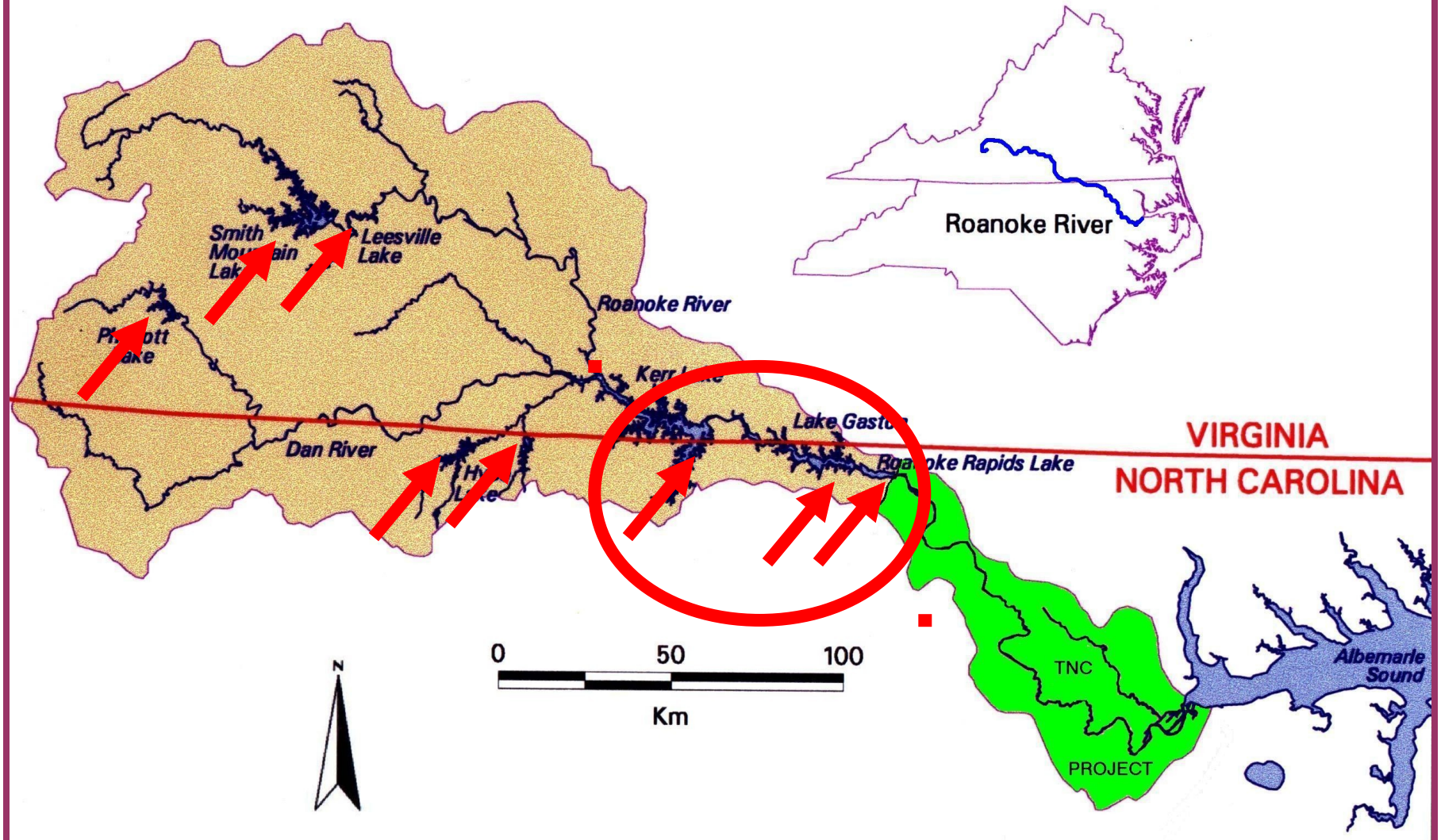
Modeling Inundation on the
Roanoke River

ROANOKE RIVER WATERSHED



ROANOKE RIVER WATERSHED



CONSERVATION SIGNIFICANCE

The Lower Roanoke River floodplain is:

- **Big = 137 miles long, and up to 5 miles wide**
- **one of the largest and least disturbed Bottomland Forest Systems on the Atlantic slope**
- **one of the largest and least disturbed Alluvial River Systems in North America**

The Lower Roanoke provides habitat for:

47 vulnerable species & co
- 2 federally listed animal
- 16 state listed animals
- 13 state listed plants
- 16 natural communities

AND
- 33 neotropical migrant b
- Several heronries
- 80 native fish species
- The most significant assemblage of migratory fish on the Atlantic Coast of the US

LAND PROTECTION

Lower Roanoke River

The Nature Conservancy

5 0 5 10 Miles

- Major Rivers and Streams
- Roquist Pocosin
- International Paper Lands
- US Fish and Wildlife Ownership
- The Nature Conservancy Ownership/Easement
- NC Wildlife Resources Commission Ownership
- Roanoke River Watershed

HALIFAX COUNTY

Roanoke River

BERTIE COUNTY

Windsor

Cashie River

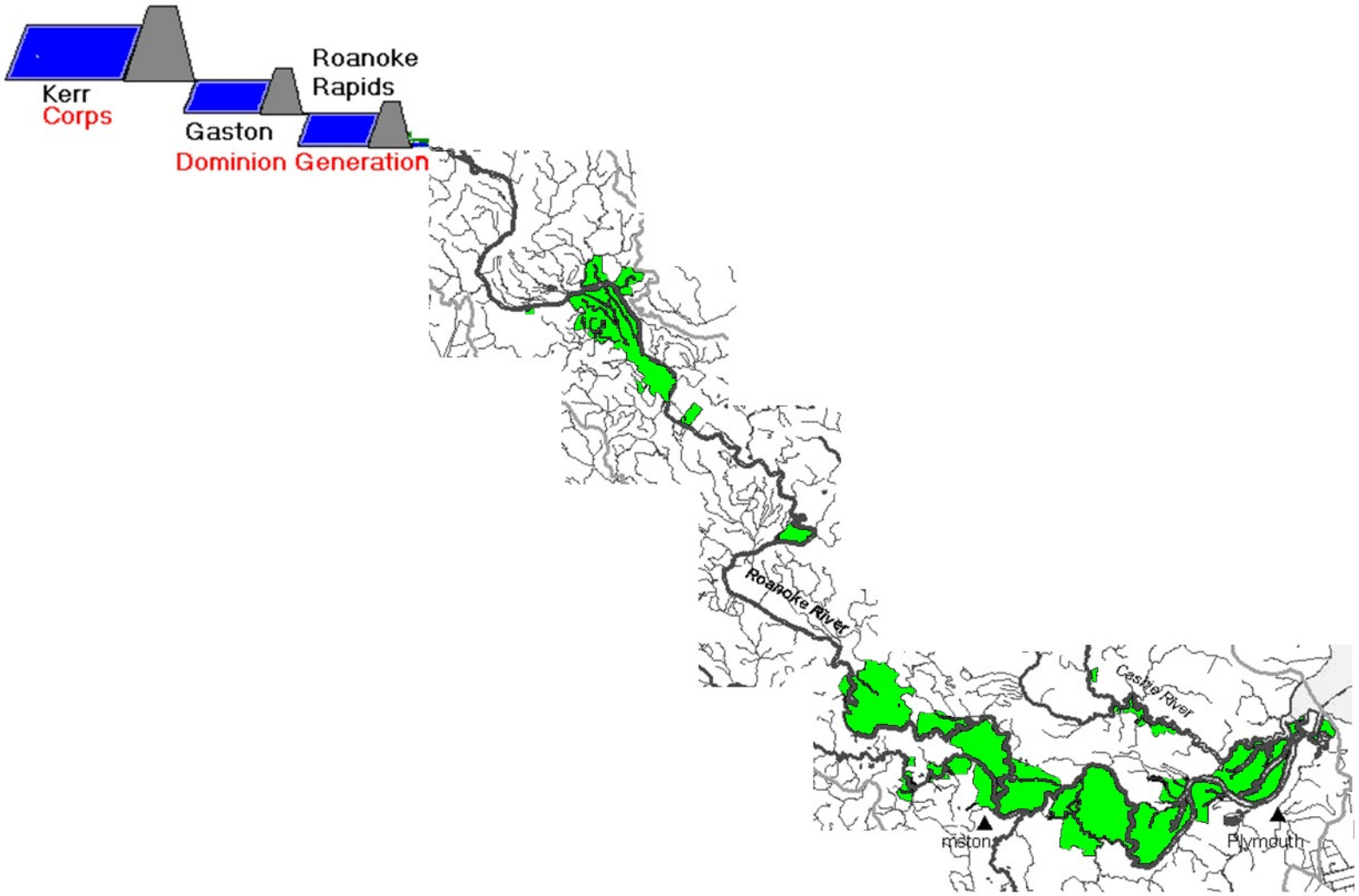
Williamston

Plymouth

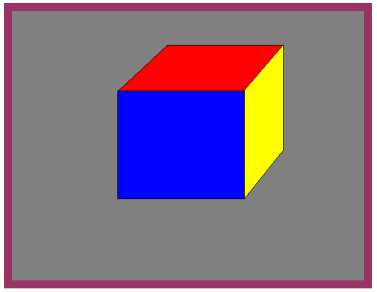
MARTIN COUNTY

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

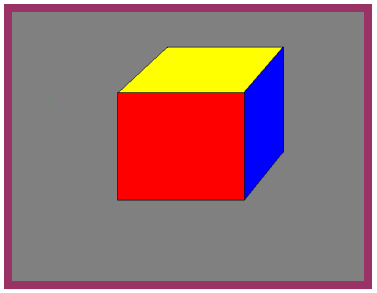
U.S. FISH & WILDLIFE SERVICE


Kerr
Corps
Roanoke
Rapids
Gaston
Dominion Generation
Roanoke River
Plymouth

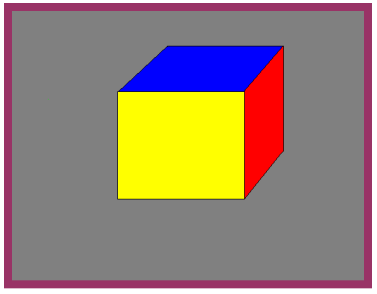
THE THREE FACES OF CONSERVATION



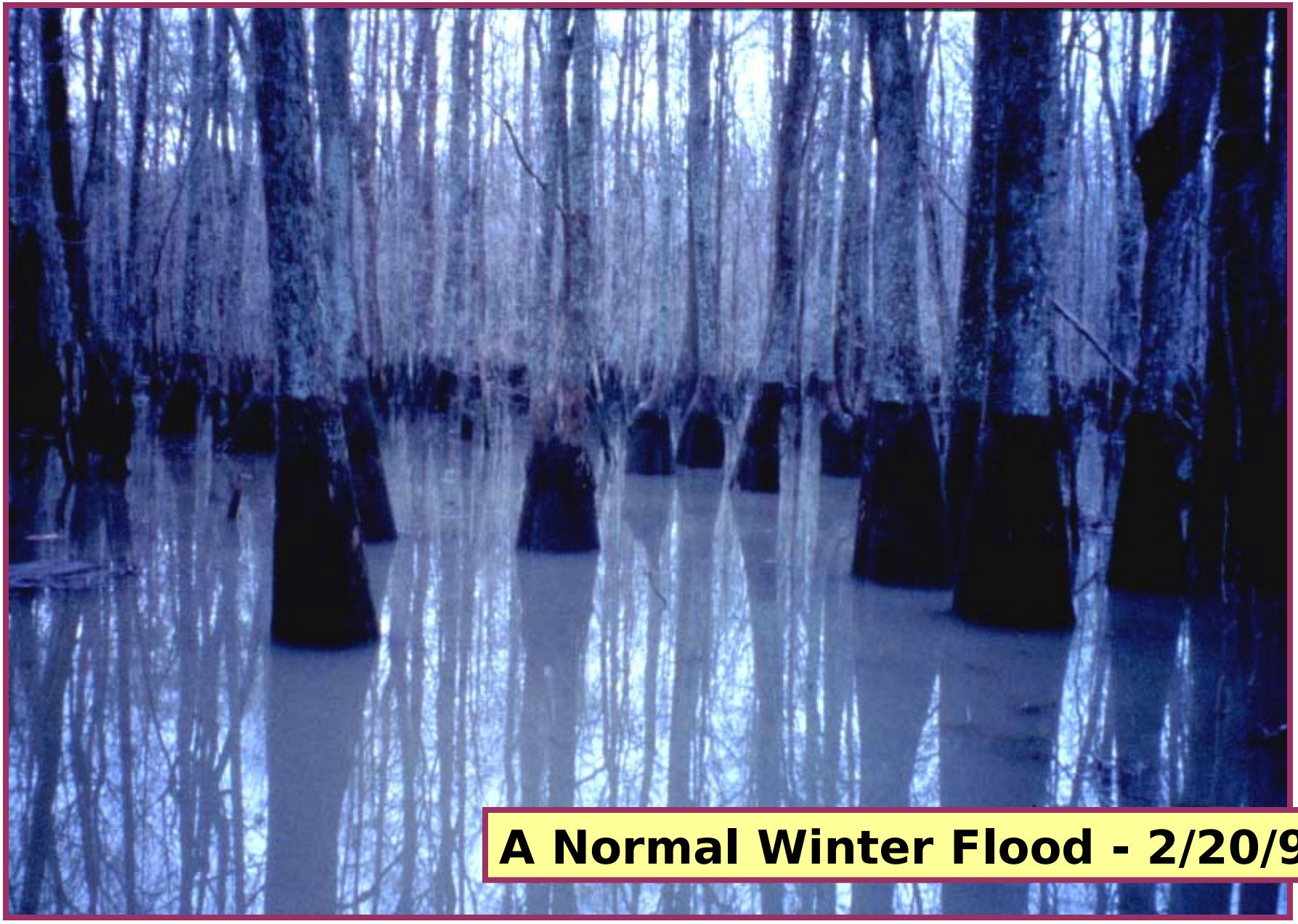
LAND PROTECTION



COMMUNITY COMMITMENT



RESTORING & PROTECTING ECOLOGICAL INTEGRITY



A Normal Winter Flood - 2/20/95

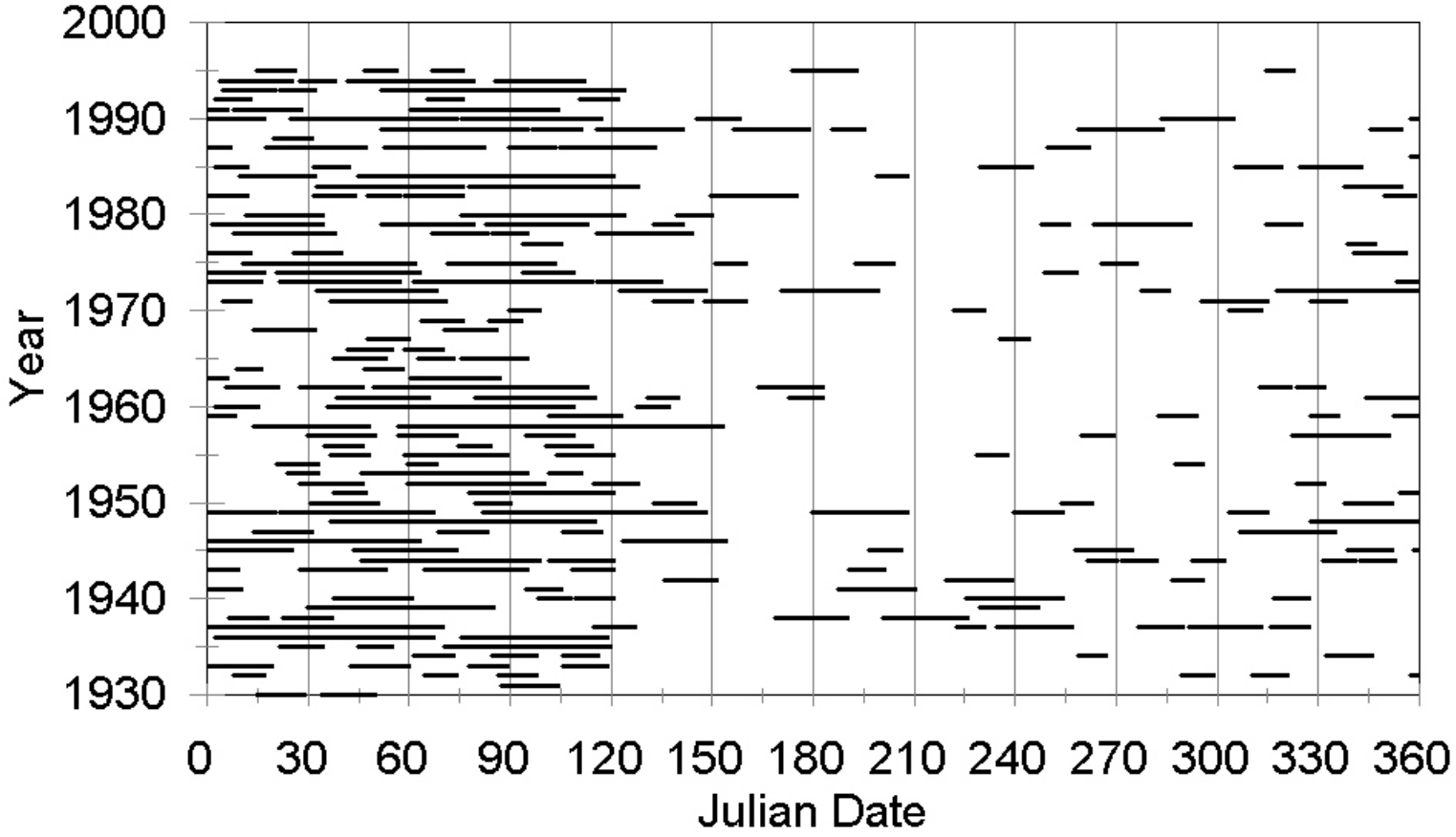
Normal Spring Dry Down - 3/20/95

Normal Summer Green Out - 5/5/95

Ecosystem Soup - 7/20/95

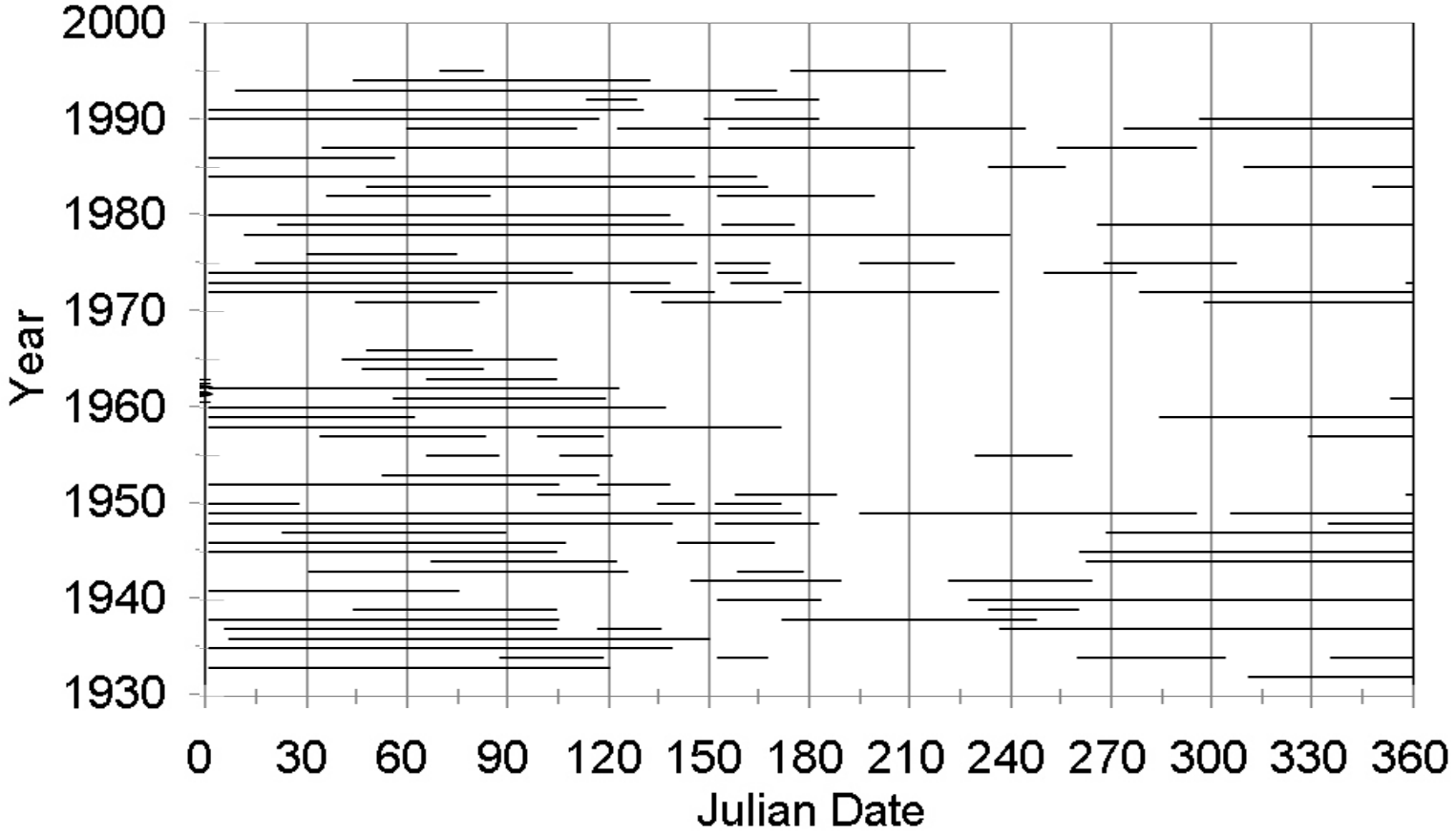
Flood Events - Unregulated

5 days > 11,500; 5 day avg < 8,500 cfs



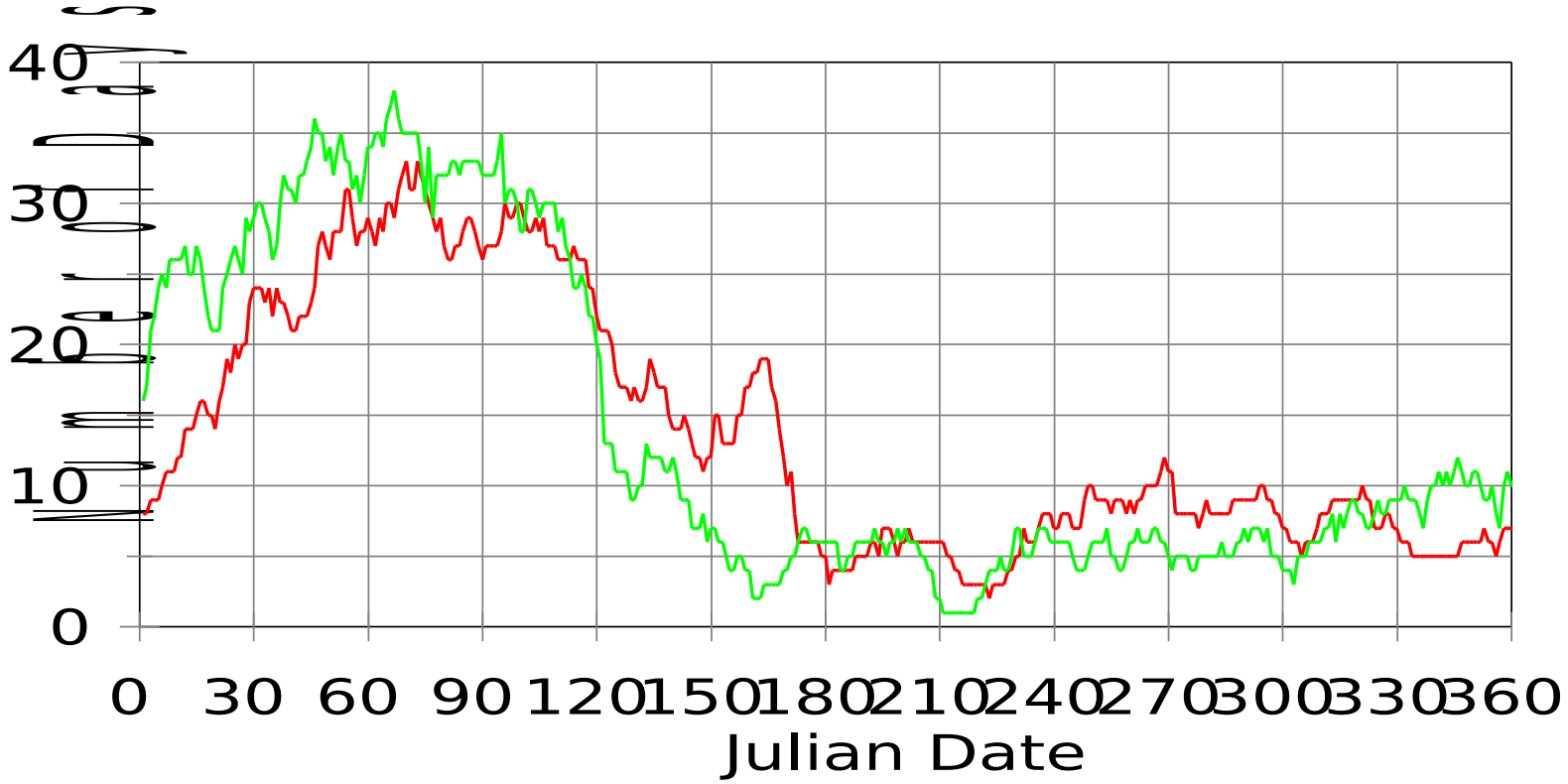
Flood Events - Current O

5 days > 11,500; 5 day avg < 8,

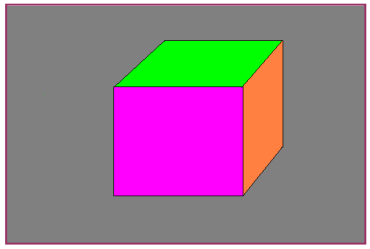


Flood Event Compariso

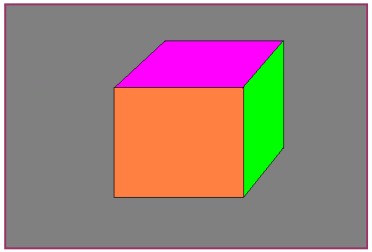
5 days > 11,500; 5 day avg < 8,5



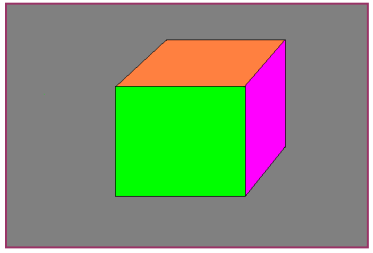
OUR THREE STRATEGIES



MODEL THE SYSTEM



NEGOTIATE WITH THE OWNERS & OPERATORS



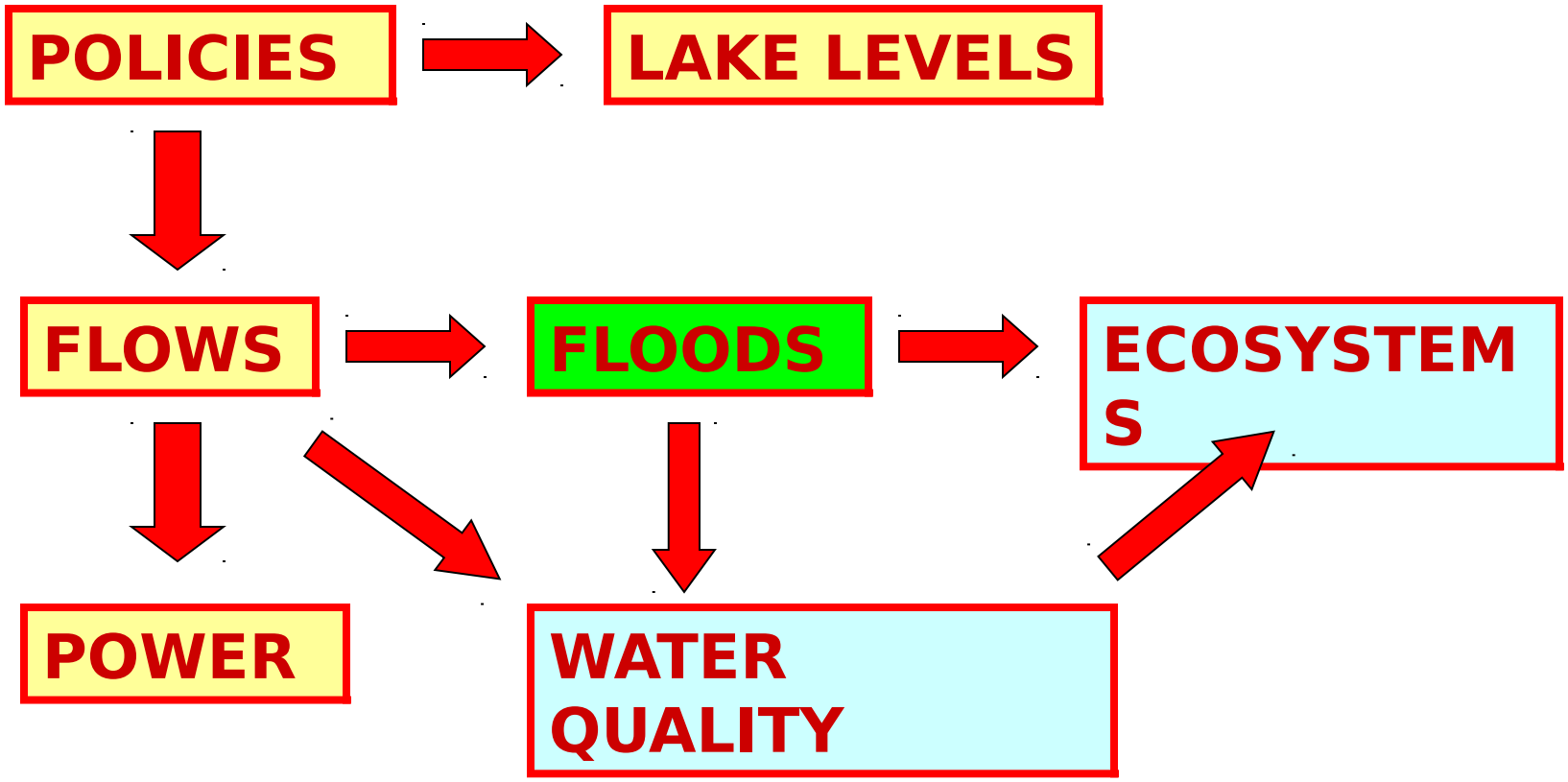
MANAGE ADAPTIVELY

NEGOTIATIONS

- **Dominion negotiations via the FERC relicensing process.**

- **USACE negotiations via a Congressionally authorized Section 2316 study**
  - **NEPA format**
  - **Evaluation tool**

THE ROANOKE RIVER SYSTEM MODEL



HydroLogics:

RRBROM

Regression equations for downstream river stages

Discharges at Roanoke Rapids tailrace & River stages

Townsend:

DEM, Veg

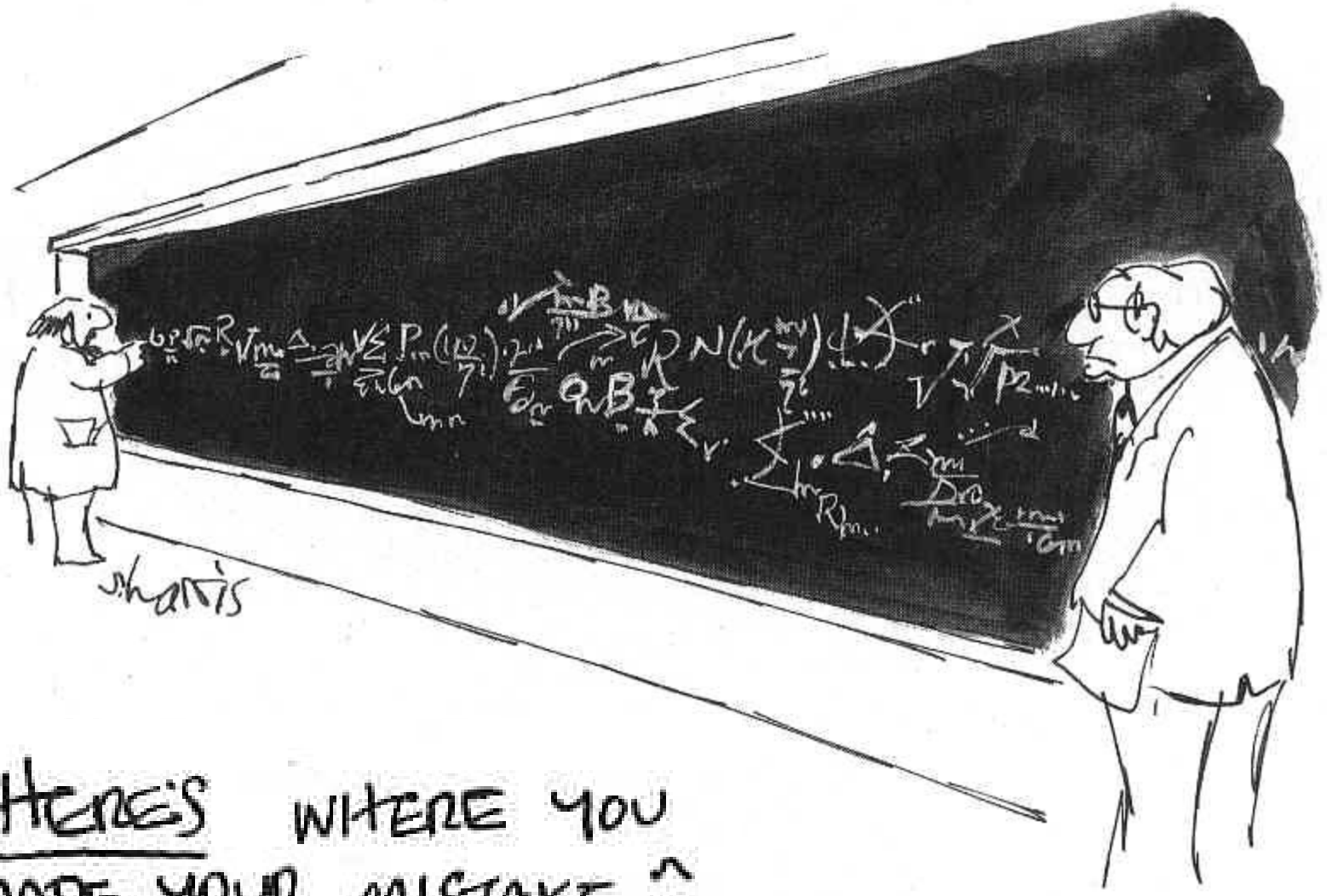
Algorithms for translating the flows and stages into Flood Extent and Depths in the floodplain

ATS:

ARC GIS

Extension that presents, summarizes in various ways, and Maps the floods via GIS

They will tell you how they did it all.



"HERE'S WHERE YOU MADE YOUR MISTAKE."